

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A ~~circuit~~ device structure comprising:

~~an interconnected plurality of semiconductor device structures arranged in an array characterized by a plurality of rows and a plurality of columns, each of said semiconductor device structures further~~

a first transistor including a first gate electrode with a vertical sidewall, a first gate dielectric disposed on the vertical sidewall of [[the]] said first gate electrode, at least one first a plurality of semiconducting carbon nanotubes each nanotube having a first end, a second end, and a channel region between said first and second ends and disposed adjacent to said vertical sidewall of said first gate electrode, and each including opposite respective first and second ends, a first source/drain contact electrically coupled with said first end of each of said at least one first semiconducting carbon nanotubes nanotube, and a second source/drain contact electrically coupled with said second end of each of said at least one first semiconducting carbon nanotubes nanotube;

a second transistor including a second gate electrode with a vertical sidewall, a second gate dielectric disposed on the vertical sidewall of said second gate electrode, at least one second semiconducting carbon nanotube having a first end, a second end, and a channel region between said first and second ends and disposed adjacent to said vertical sidewall of said second gate electrode, a third source/drain contact electrically coupled with said first end of said at least one second semiconducting carbon nanotube, and a fourth source/drain contact electrically coupled with said second end of said at least one second semiconducting carbon nanotube; and

a dielectric-filled space between said vertical sidewall of said first gate electrode and said vertical sidewall of said second gate electrode, said at least one first semiconducting carbon nanotube disposed within said dielectric-filled space.

2. (Cancelled)

3. (Currently Amended) The ~~circuit~~ device structure of claim 1 wherein each of said at least one first semiconducting carbon ~~nanotubes~~ nanotube is a single-wall semiconducting carbon nanotube.

4. (Cancelled)

5. (Currently Amended) The ~~circuit~~ device structure of claim 1 wherein said first source/drain contact includes a catalyst pad characterized by a catalyst material having a composition effective for growing said at least one first semiconducting carbon ~~nanotubes~~ nanotube.

6. (Currently Amended) The ~~circuit~~ device structure of claim 5 wherein said first end of said at least one first semiconducting carbon ~~nanotubes~~ nanotube has a composition including an electrical-conductivity enhancing substance diffused from said catalyst pad into said first end during growth.

7. (Currently Amended) The ~~circuit~~ device structure of claim 1 wherein ~~each of said plurality of semiconductor device structures~~ said first transistor further comprises:

an insulating layer disposed between said first source/drain contact and said first gate electrode for electrically isolating said first contact from said first gate electrode.

8. (Currently Amended) The ~~circuit~~ device structure of claim 1 wherein ~~each of said semiconductor device structures~~ said first transistor further comprises:

an insulating layer disposed between said second source/drain contact and said first gate electrode for electrically isolating said second source/drain contact from said first gate electrode.

9. (Withdrawn- Currently Amended) The ~~circuit~~ device structure of claim 1 wherein ~~each of~~ ~~said plurality of semiconductor device structures~~ said first transistor further comprises:

a ~~[[third]]~~ gate contact; and

at least one electrically-conducting carbon nanotube electrically coupling said first gate electrode with said ~~[[third]]~~ gate contact.

10. (Withdrawn- Currently Amended) The ~~circuit~~ device structure of claim 1 wherein said second source/drain contact includes a vertically-extending metal post electrically coupled with said second end of said first plurality of semiconducting carbon nanotubes.

11. (Withdrawn- Currently Amended) The ~~circuit~~ device structure of claim 10 wherein said second source/drain contact includes a conductive layer extending horizontally beneath said first gate electrode for electrically coupling said catalyst pad with said metal post.

12. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 1 wherein said second source/drain contact includes at least one electrically-conducting carbon nanotube extending substantially vertically and electrically coupled with said second end of each of said at least one first semiconducting carbon ~~nanotubes~~ nanotube.

13. (Withdrawn- Currently Amended) The ~~circuit~~ device structure of claim 12 wherein said second source/drain contact includes a conductive layer extending horizontally beneath said first gate electrode for electrically coupling said second end of each of said at least one first semiconducting carbon ~~nanotubes~~ nanotube with said at least one electrically-conducting carbon nanotube.

14-18. (Cancelled)

19. (Currently Amended) The ~~circuit~~ device structure of claim 1 further comprising:

a substrate carrying said ~~plurality of semiconductor device structures~~ first and second transistors and characterized by a surface area viewed vertical to the substrate, ~~said plurality of semiconductor device structures separated by a space filled by a dielectric material~~, and said dielectric-filled space ranging ranges from about 20 percent to about 50 percent of said surface area.

20-33. (Cancelled)

34. (Currently Amended) The ~~circuit~~ device structure of claim 5 wherein said catalyst pad further comprises nanocrystals of the catalyst material.

35. (Currently Amended) The ~~circuit~~ device structure of claim 1 ~~wherein each of said semiconductor device structures~~ further ~~comprises~~ comprising:

a capacitor electrically coupled with said first source/drain contact.

36. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 13 wherein ~~each of said semiconductor device structures~~ said first transistor further comprises:

a catalyst pad electrically coupling said at least one electrically-conducting carbon nanotube with said conductive layer, said catalyst pad composed of a material capable of growing said electrically-conducting carbon nanotube.

37. (Withdrawn- Currently Amended) The ~~circuit~~ device structure of claim 36 wherein said catalyst pad further comprises nanocrystals of the catalyst material.

38. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 11 further comprising:

an insulating layer positioned between said conductive layer and said first gate electrode, said insulating layer electrically isolating said first gate electrode from said conductive layer.

39. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 11 further comprising:

a substrate carrying said ~~plurality of semiconductor device structures~~ first and second transistors, said conductive layer being arranged vertically between said first gate electrode and said substrate.

40. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 13 further comprising:

an insulating layer positioned between said conductive layer and said first gate electrode, said insulating layer electrically isolating said first gate electrode from said conductive layer.

41. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 13 further comprising:

a substrate carrying said ~~plurality of semiconductor device structures~~ first and second transistors, said conductive layer being arranged vertically between said first gate electrode and said substrate.

42. (Withdrawn - Currently Amended) The ~~circuit~~ device structure of claim 9 wherein ~~each of said semiconductor device structures~~ said first transistor further comprises:

a catalyst pad electrically coupling said electrically-conducting carbon nanotube with said first gate electrode, said catalyst pad participating in the synthesis of said electrically-conducting carbon nanotube.

43-53. (Cancelled)